**b. The extent to which the services to be provided by the proposed project reflect up-to-date knowledge from research and effective practice.**

Current research supports the three goals and their respective methods of attainment proposed by The GREAT MINDS: establishing an international consortium to identify and discuss best practices in STEM education; creating innovative STEM curriculum through pre-service and in service teacher training and problem solving; and increasing the enrollment and retention of high needs students in undergraduate teacher education programs.

The establishment of an international consortium with a culmination in an international summit will aid in reaching the goal of creating innovative STEM curriculum through pre-service and in service teacher training in critical thinking and problem solving. By affording the local teaching community (pre-service and in service) the opportunity to interact with and learn from a diverse consortium of globally renowned educators, business leaders and other innovators, these educators-in-training will be exposed to the best minds in the STEM community utilizing the most current technologies both in communication and in teaching.

According to Gilbert (2009) major researchers in the field agree that the inquiry-based, constructivist approach like that employed by GREAT MINDS is “the most effective approach in teaching science” (p. 432) and thus the most pedagogically sound means of delivering STEM instruction. Gilbert uses the National Research Council’s (2000) “five essential features that are at the core of inquiry-based approaches to science teaching and learning”:

The learner: (1) engages in scientific questioning, (2) searches for evidence to support ideas, (3) hypothesizes possible explanations based on evidence, (4) connects those explanations to science understanding, and (5) shares findings and explanations with larger classroom community. (p. 432)

“Accordingly,” Gilbert posits, “teachers must constantly question their own strategies and behaviors so as to ensure that they are providing students with meaningful scientific investigation rather than cookbook type activities” (p. 432). The pedagogy proposed by GREAT MINDS will achieve this higher level of cognition and critical thinking in its students through exposing pre-service and in service educators to global best teaching practices and providing them the arena in which to practice, then reflect upon, those practices during the project’s summer camp.

Finally, addressing the vital need for recruitment and retention of high needs students, particularly among the Black American population, GREAT MINDS directly addresses the President’s Council of Advisors on Science and Technology (2010) directive that

At the middle and high school levels, the Federal Government should set a goal of ensuring the recruitment, preparation, and induction support of at least 100,000 new STEM teachers over the next decade from programs that are (i) designed to produce teachers who have strong majors in STEM fields and strong content-specific pedagogical preparation – including teachers from nontraditional backgrounds who help diversify the STEM teaching force – and (ii) capable of measuring both the student achievement and the retention of the teachers they produce. (p. 65)

Gilbert, A. (2009). Utilizing science philosophy statements to facilitate k-3 teacher candidates’

development of inquiry-based science practice. *Early childhood education journal, 36,* 431-438.

National Research Council. (2000). *National Science Education Standards.* Washington, DC:

National Academy Press.

THIRD QUOTE IS FROM REFERENCES FROM SECTION YOU CUT FROM PART I.